

1. A method for the manufacture of a conductive polymer composite, comprising impregnating a polymer with a catalyst effective for the polymerization of polypyrrole, wherein impregnating is in the absence of a volatile organic solvent; and exposing the impregnated polymer to a pyrrole-containing monomer vapor to form a conductive polymer composite.

2. The method of claim 1, wherein the pyrrole-containing monomer vapor comprises pyrrole or pyrrole and N-methyl pyrrole.

3. The method of claim 1, wherein the composite has a conductivity of about 10^{-7} to about 10^{-1} S/cm inclusive.

4. The method of claim 1, wherein impregnating is by exposing the polymer to iodine vapor.

5. The method of claim 1, wherein impregnating is by exposing the polymer to iodine in supercritical carbon dioxide.

7. The method of claim 1, wherein the polymer is a foam.

8. The method of claim 1, wherein the polymer is a polyurethane, a polybutadiene, or a styrene-butadiene copolymer.

9. A method for the manufacture of a conductive polymer composite, comprising impregnating a polymer with a vaporous halogen in the absence of a volatile organic solvent; and

exposing the treated polyurethane foam to a pyrrole-containing monomer vapor to form a conductive polymer composite.

10. The method of claim 9, wherein the pyrrole-containing monomer vapor comprises pyrrole or pyrrole and N-methyl pyrrole.

11. The method of claim 9, wherein the composite has a conductivity of about 10^{-7} to about 10^{-1} S/cm, inclusive.

12. The method of claim 9, wherein the impregnating is by exposing the polymer to iodine vapor.

13. The method of claim 9, wherein the polymer is a foam.

14. The method of claim 9, wherein the polymer is a polyurethane, a polybutadiene, or a styrene-butadiene copolymer.

15. A conductive elastomeric foam composite, formed by the method of claim 1.

16. The conductive composite of claim 15, wherein the composite has a conductivity of about 10^{-7} to about 10^{-1} S/cm, inclusive.

17. A conductive elastomeric foam composite, formed by the method of claim 9.

18. The conductive composite of claim 17, wherein the composite has a conductivity of about 10^{-7} to about 10^{-1} S/cm, inclusive.

19. A conductive polymeric composite comprising a host polymer and a polypyrrole, wherein the composite has a conductivity of about 10^{-7} to about 10^{-1} S/cm inclusive, and further wherein the surface conductivity of a first side is within an order of magnitude of a surface conductivity of a second side parallel to the first side.

20. The composite of claim 19, wherein the surface conductivity of the first side is within 50% of the surface conductivity of the second side.

21. The composite of claim 19, wherein the surface conductivity of the first side is within 20% of the surface conductivity of the second side.

22. The composite of claim 19, wherein the surface conductivity of the first side is within 10% of the surface conductivity of the second side.